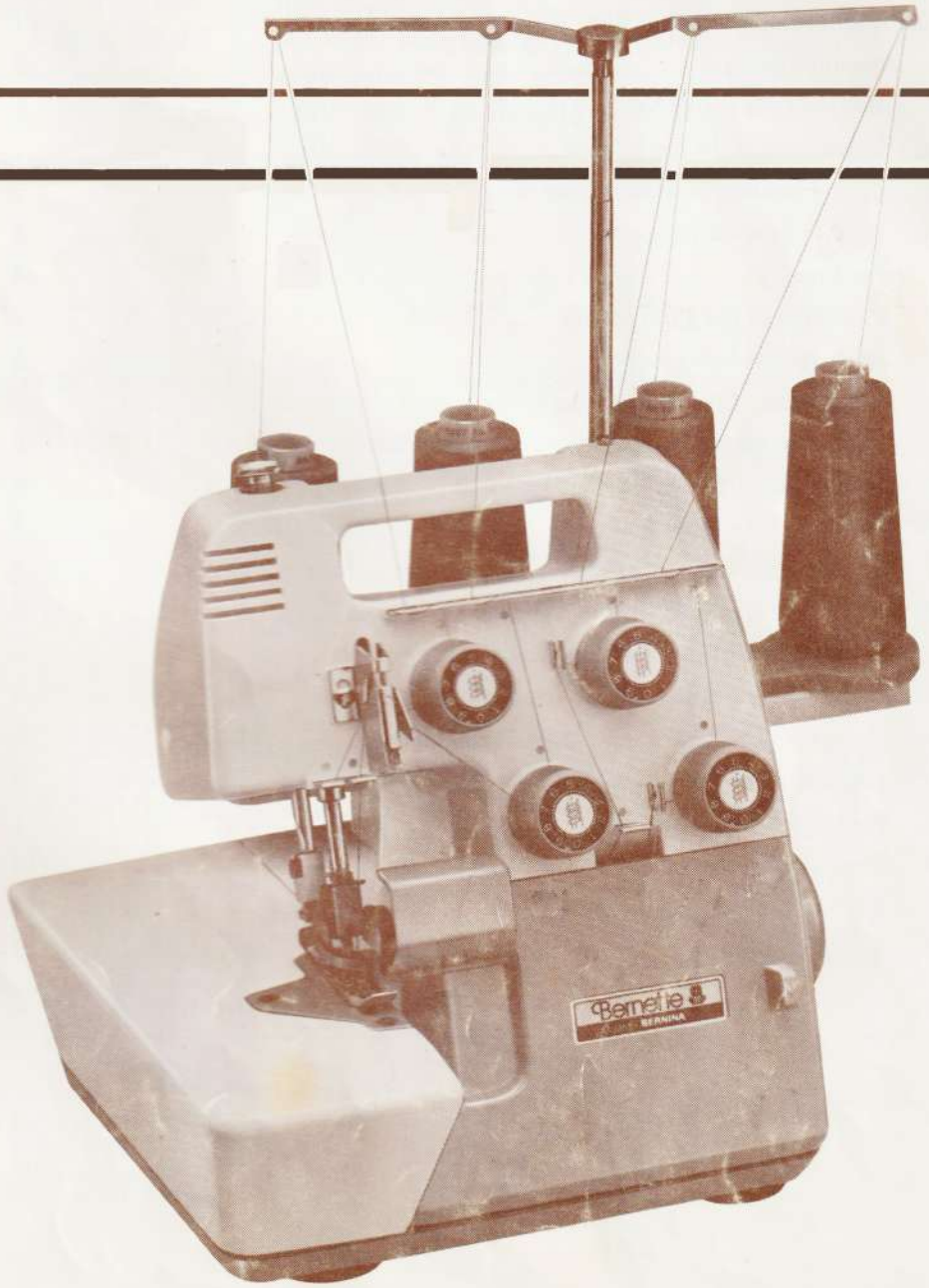
Bernette

Model MO-234

2-NEEDLE, 4-or 3-THREAD CONVERTIBLE
OVERLOCK SEWING MACHINE

SERVICE MANUAL



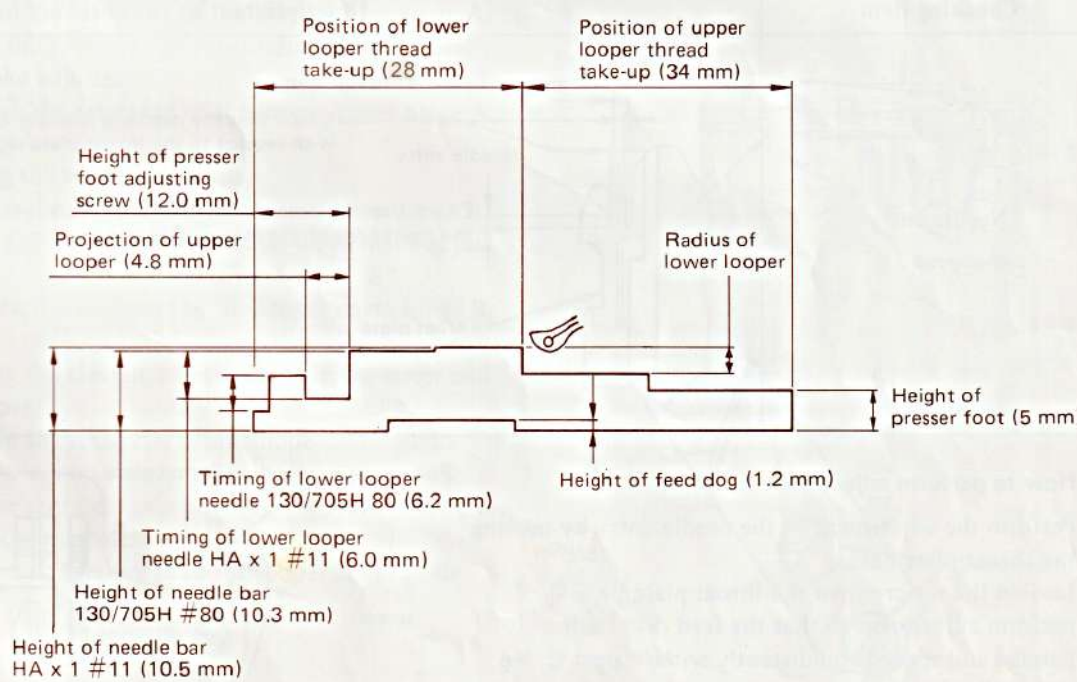
• CONTENTS

		Page
Model MO-234 specification		1
Timing gauge for Model MO-234		1
Adjustment Procedures		2
1.	Height of the needle bar	2
2.	Installation of the throat plate	2
3.	Lateral position of the feed dog	3
4.	Height of the feed dog	3
5.	Feed timing	4
6.	Projection of the upper looper	4
7.	Radius of the lower looper	5
8.	Adjustment of the lower looper with respect to the needle	5
9.	Timing between the upper looper and lower looper	6
10.	Installation of the needle guards	6
11.	Position of the lower knife	7
12.	Engagement of the upper knife with the lower knife	7
13.	Height and lateral position of the presser foot	8
14.	Setting of the presser foot adjusting screw	8
15.	Position of the upper looper thread take-up	9
16.	Position of the lower looper thread take-up	9
17.	Position of the cloth plate	10
18.	Position of the looper cover	11
19.	Tension of the belt	12
20.	Position of the needle thread guide	12
21.	Thread tension controller	13

■ Model MO-234 SPECIFICATION

Items	Description
No. of needles & threads	: 2-needle, 4-or 3-thread convertible
Needles	: 130/705H size 80, or HA x 1 #11
Overedging width	2-needle, 4-thread: 6 mm 1-needle, 3-thread: 4 mm (right needle) 6 mm (left needle)
Stitch length	: Adjustable from 1.0 mm to 5.0 mm (Standard: 2.5 mm)
Lift of presser foot	: 5 mm
Light	: Built-in light 15W
Power switch	: With light, 3-step setting type for USA and Canada, normally 2-step.
Motor	: 115V 100W 220V 100W Including 15W of light 240V 100W
Machine size	: 300 mm wide x 265 mm deep x 280 mm high
Weight	: 7.2 kg

■ Timing Gauge for Model MO-234 (Order Number 501 010 03)

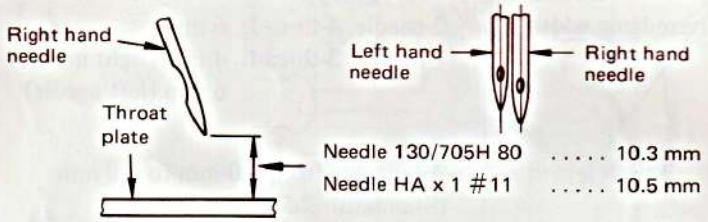

Position of lower looper thread take-up (28 mm)
Position of upper looper thread take-up (34 mm)
Height of presser foot adjusting screw (12.0 mm)
Projection of upper looper (4.8 mm)
Radius of lower looper
Height of presser foot (5 mm)
Timing of lower looper needle 130/705H 80 (6.2 mm)
Height of feed dog (1.2 mm)
Timing of lower looper needle HA x 1 #11 (6.0 mm)
Height of needle bar 130/705H #80 (10.3 mm)
Height of needle bar HA x 1 #11 (10.5 mm)

■ ADJUSTMENT PROCEDURES

1. Height of the needle bar

● **Checking**

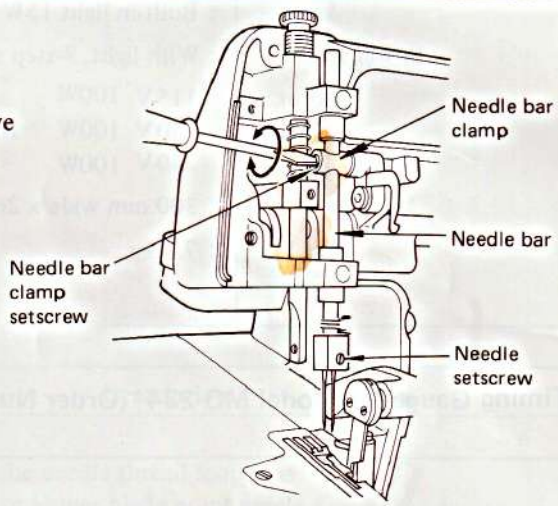
Checking item	Description
Height of the needle bar	Check the distance between the throat plate surface and the right hand needle point with the needle bar at the highest point of its stroke.



● **How to perform adjustment**

1. Allow the needle bar to reach its highest point.
2. Loosen the setscrew of the needle bar clamp, and move the needle bar up or down to make adjustment.
3. Tighten the setscrew of the needle bar clamp.

* Check that the right and left needles have the same clearance to the lower looper.



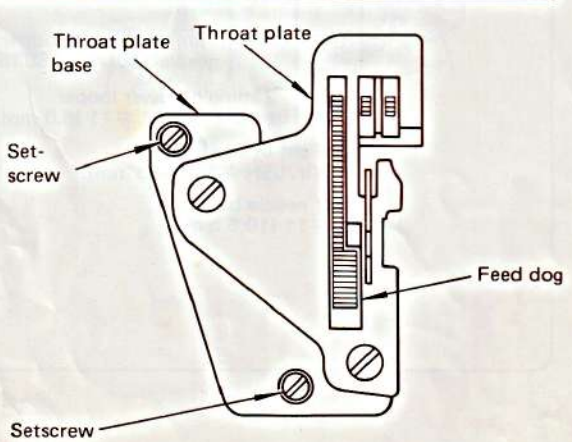
2. Installing the throat plate

● **Checking**

Checking item	Description
Needle entry	Center of needle entry Check that the needle is laterally equidistant with respect to the throat plate slot. Needle entry Check that the distance between the needle center and the front edge of the throat plate slot is 1.4 mm. Throat plate

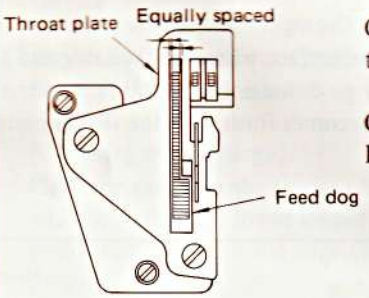
● **How to perform adjustment**

1. Perform the adjustment of the needle entry by moving the throat plate base.
2. Loosen the setscrews of the throat plate base, and perform adjustment so that the feed dog teeth are parallel and spaced equidistantly with respect to the slot in the throat plate.
3. Tighten the setscrews of the throat plate base.



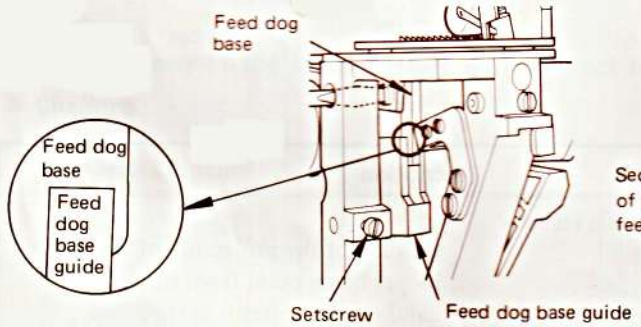
3. Lateral position of the feed dog

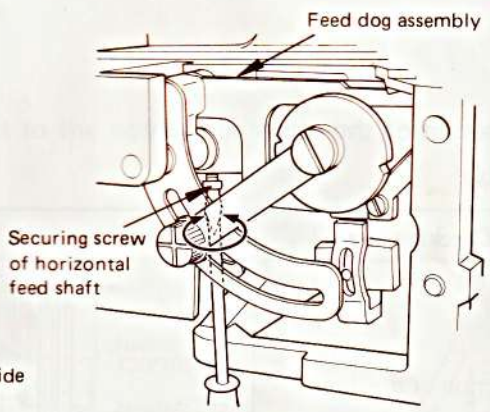
- **Checking**

Checking item	Description
Lateral position of the feed dog	 Check that the feed dog and the slot in the throat plate are parallel with each other. Check that the clearances on the right and left side of the feed dog are equal.

- **How to perform adjustment**

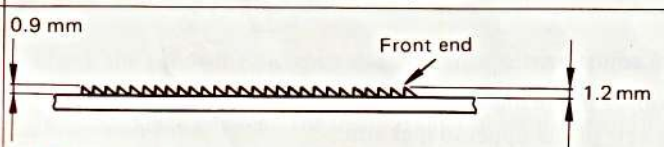
1. Loosen the setscrew of the feed dog base guide.
2. Loosen the fixing screw of the horizontal feed shaft.
3. Move the feed dog assembly to the right or left for adjustment.
4. Tighten the fixing screw of the horizontal feed shaft.
5. Adjust the feed dog base guide vertically.
6. Tighten the setscrew of the feed dog base guide.





4. Height of the feed dog

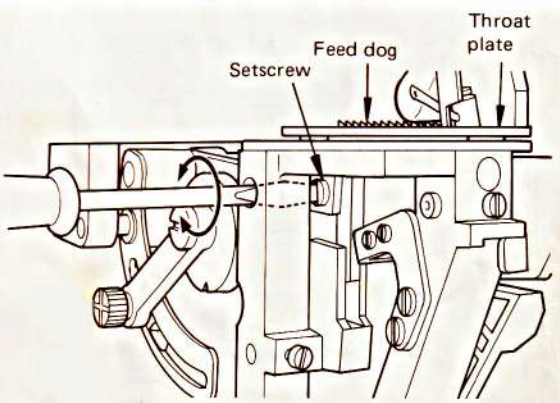
- **Checking**

Checking item	Description
Height of the feed dog	 Check that the maximum projection of the feed dog from the throat plate surface is as specified when the feed dog is in the highest position of its travel.

- **How to perform adjustment**

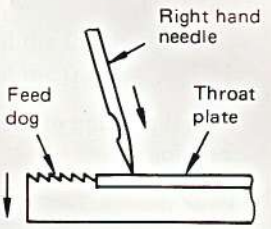
1. Set the feed dog in its highest position of its travel.
2. Loosen the setscrew of the feed dog.
3. Move the feed dog up or down to perform adjustment.
4. Tighten the setscrew of the feed dog.

Note : Ensure that the feed dog is parallel to the throat plate surface when the top face of the feed dog is flush with the throat plate surface.



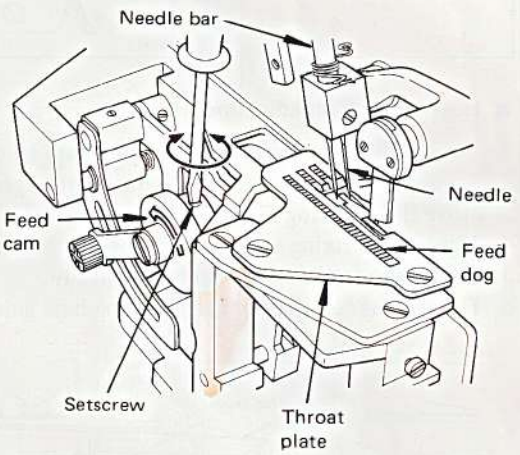
5. Feed timing

● **Checking**

Checking item	Description
Feed timing	Check that the right hand needle point meets the throat plate surface when the feed dog and the needle bar go down until the top face of the feed dog becomes flush with the throat plate surface. 

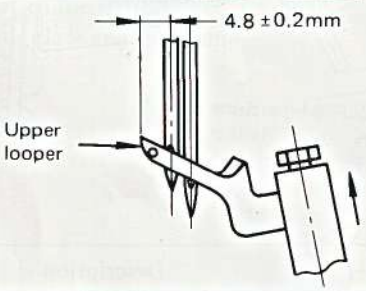
● **How to perform adjustment**

1. Loosen the two setscrews of the feed cam.
2. Allow the needle bar to go down and make the right hand needle point meet the throat plate surface.
3. Turn the feed cam in the forward direction (the feed dog goes down as the cam is turned in the direction of arrow) until the top face of the feed dog becomes flush with the throat plate surface.
4. Tighten the two setscrews of the feed cam.



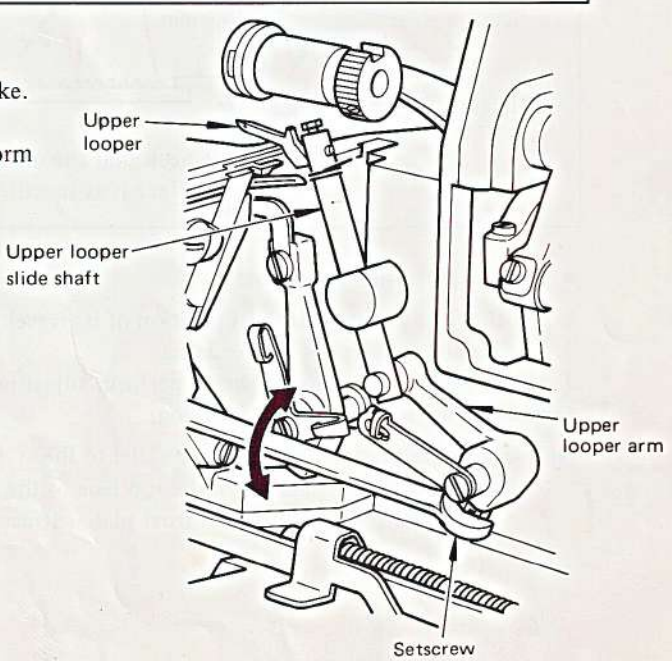
6. Projection of the upper looper

● **Checking**

Checking item	Description
Projection of the upper looper	 Check that the projection of the upper looper blade point from the left hand needle center is as specified when the upper looper is at the highest point (leftmost point) of its stroke.

● **How to perform adjustment**

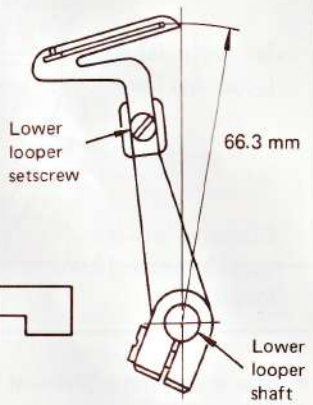
1. Set the upper looper in the highest position of its stroke.
2. Loosen the setscrew of the upper looper arm.
3. Move the upper looper slide shaft up or down to perform adjustment.
4. Tighten the setscrew of the upper looper arm.

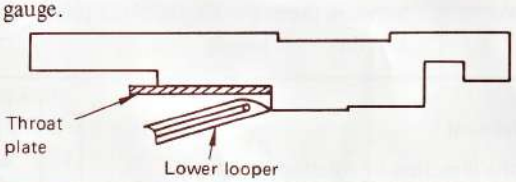


7. Radius of the lower looper

● **Checking**

Checking item	Description
Radius of the lower looper	Check that the distance from the center of the lower looper shaft to the lower looper blade point is 66.3 mm. [Checking with a gauge] Place the gauge on the throat plate, and check that the lower looper blade point is aligned with the edge of the gauge.





● **How to perform adjustment**

1. Loosen the setscrew of the lower looper.
2. Move the lower looper up or down to make adjustment.
3. Tighten the setscrew of the lower looper.

8. Adjustment of the lower looper with respect to the needle

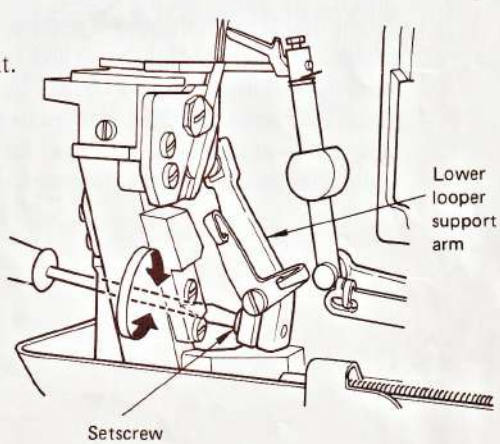
● **Checking**

Checking items	Description
[a] Distance between lower looper blade point and right hand needle point [b] Clearance between lower looper blade point right and left hand needle	[a] [b] Needle 130/705H 80 : 6.2 mm Needle HA x 1 #11 : 6.0 mm Lower looper Lower looper blade point 0.05–0.1 mm Check the following distance and clearance when the needle goes up and the looper blade point meets the right hand needle center. [a] Distance between the lower looper blade point and the right hand needle point. [b] Clearance between the lower looper blade point and the right and left hand needle.

● **How to perform adjustment**

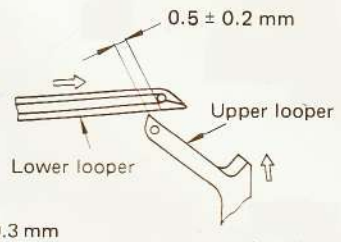
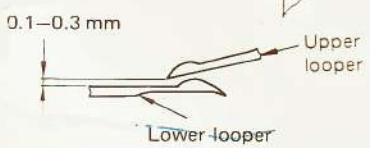
Adjustment of the right hand needle and lower looper blade point.

1. Loosen the setscrew of the lower looper support arm.
2. Turn and move back or forth the lower looper support arm to make adjustment.
3. Tighten the setscrew of the lower looper support arm.
4. At the same time check the clearance between lever looper and the right and the left hand needle.



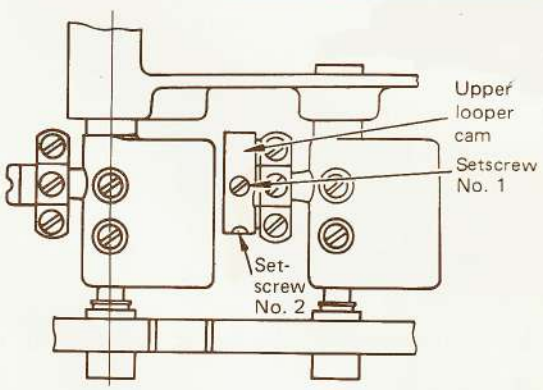
9. Timing between the upper looper and lower looper

● **Checking**

Checking items	Description
Meeting point of upper looper and lower looper	Check the clearance between the projecting part of the lower looper and the blade point of the upper looper when the upper looper goes up and the upper looper blade point meets the lower looper. 
Clearance between upper looper and lower looper	Check the front-to-back clearance between the upper looper blade point and the lower looper. 

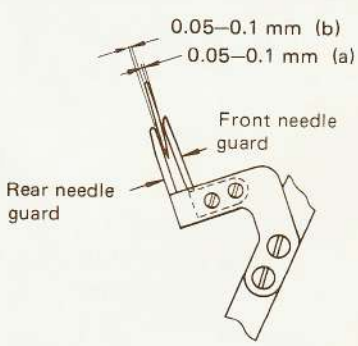
● **How to perform adjustment**

As the first setscrew in the direction of rotation is situated on a flat, the setting is automatic.



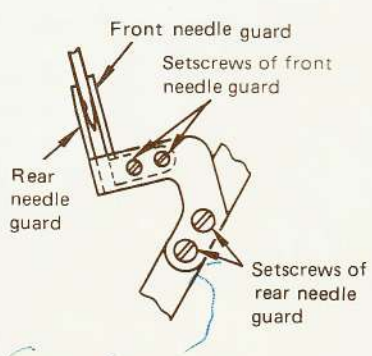
10. Installation of the needle guards

● **Checking**

Checking item	Description
Clearance between needle and needle guards	Check the clearances between the needle and the needle guards when the needle bar is in the lowest position of its stroke. [a] Clearance between the front needle guard and the needle. [b] Clearance between the rear needle guard and the needle. 

● **How to perform adjustment**

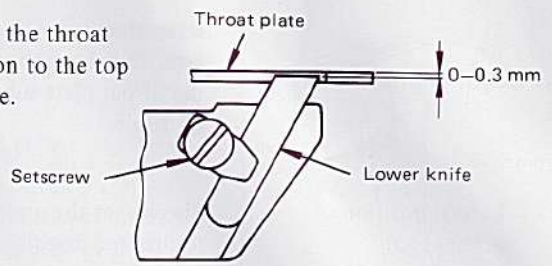
1. Set the needle bar in the lowest position of its stroke.
2. Loosen the setscrews of the front and rear needle guards.
3. Move the rear needle guard to make adjustment.
4. Tighten the setscrews of the rear needle guard.
5. Move the front needle guard to make further adjustment.
6. Tighten the setscrews of the front needle guard.



Snug lower screw, Adjust with upper screw loose, then tighten upper screw, then lower,

11. Position of the lower knife

● **Checking**

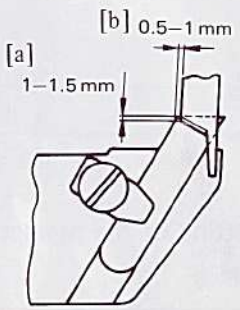
Checking item	Description
Position of lower knife	Check the position of the throat plate surface in relation to the top face of the lower knife. 

● **How to perform adjustment**

1. Loosen the setscrew of the lower knife.
2. Move the lower knife up or down to make adjustment.
3. Tighten the setscrew of the lower knife.

12. Engagement of the upper knife with the lower knife

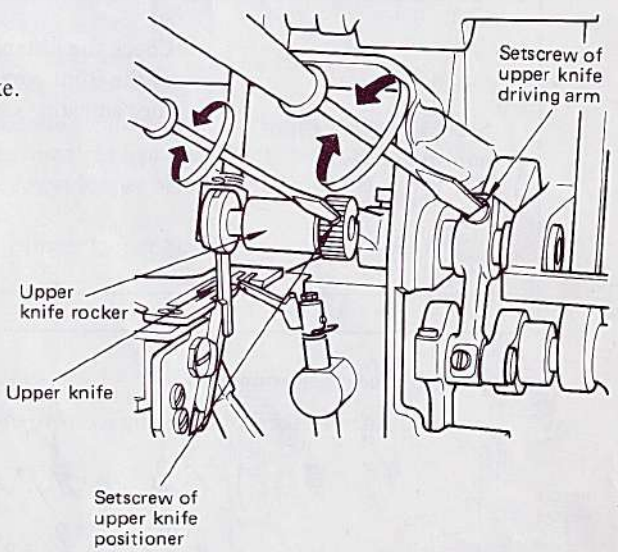
● **Checking**

Checking item	Description
Engagement of upper knife with the lower knife	Check the engagement of the upper knife with the lower knife when the upper knife is in the lowest position of its stroke. [a] Vertical engagement 1–1.5 mm [b] Longitudinal engagement 0.5–1 mm 

● **How to perform adjustment**

[a] Adjusting the vertical engagement
1. Set the upper knife in the lowest position of its stroke.
2. Loosen the setscrew of the upper knife driving arm.
3. Move the upper knife rocker up or down to make adjustment.
4. Tighten the setscrew of the upper knife driving arm.

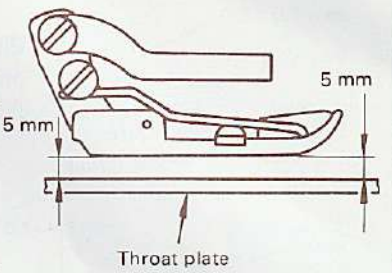
[b] Adjusting the longitudinal engagement
1. Loosen the setscrew of the upper knife positioner.
2. Turn the upper knife to perform adjustment.
3. Tighten the setscrew of the upper knife positioner.



13. Height and lateral position of the presser foot

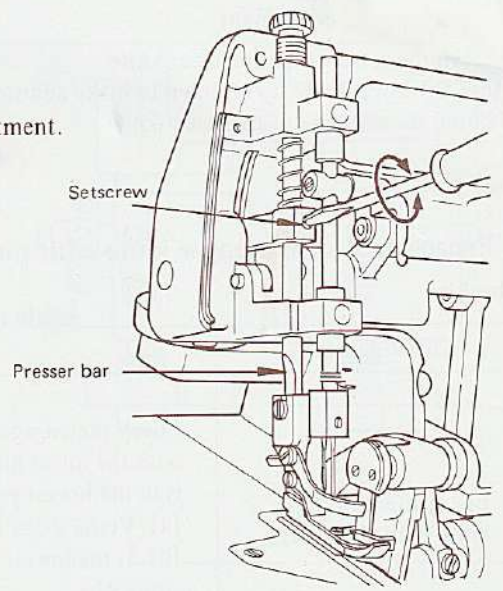
● **Checking**

Checking items	Description
Height of presser foot	Raise the presser foot using the lifting lever and check the distance between the throat plate surface and the presser foot sole.
Lateral position of presser foot	Check that the presser foot is parallel to the feed dog slot in the throat plate.



● **How to perform adjustment**

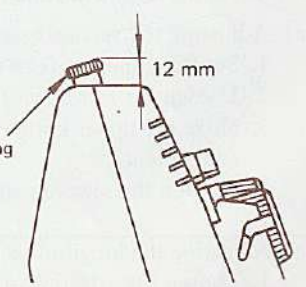
1. Move up the presser foot by the lifting lever.
2. Loosen the setscrew of the presser bar clamp.
3. Move up or down and turn the presser bar to make adjustment.
4. Tighten the setscrew of the presser bar clamp.



14. Setting of the presser foot adjusting screw

● **Checking**

Checking item	Description
Setting of presser foot adjusting screw	Check the distance between the top face of the front cover and that of the presser foot adjusting screw.

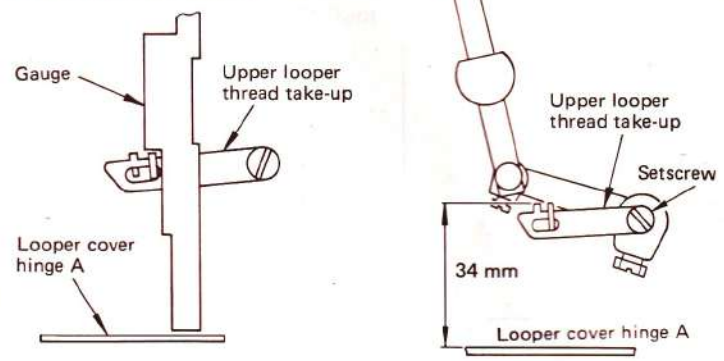


● **How to perform adjustment**

Turn in or out the presser foot adjusting screw to make adjustment.

15. Position of the upper looper thread take-up

● **Checking**

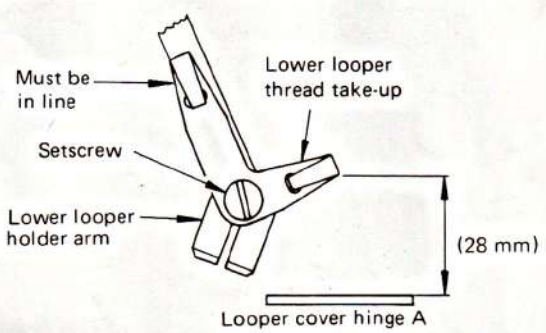
Checking item	Description
Position of upper looper thread take-up	Check the distance between the top face of the looper cover hinge A and the upper looper thread take-up when the upper looper is in its highest position. 

● **How to perform adjustment**

1. Set the upper looper in the highest position of its stroke.
2. Loosen the setscrew of the upper looper thread take-up.
3. Turn the upper looper thread take-up to make adjustment.
4. Tighten the setscrew of the upper looper thread take-up.

16. Position of the lower looper thread take-up

● **Checking**

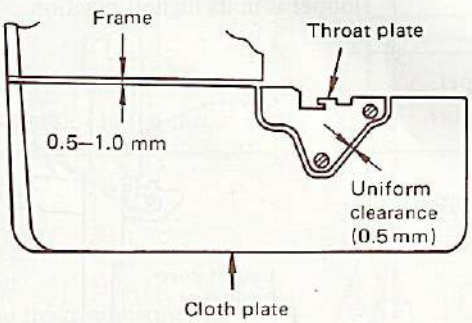
Checking item	Description
Position of lower looper thread take-up	Check the position of the lower looper thread take-up to the lower looper holder arm. * The top left side of the lower looper thread take-up and the left side of the lower looper holder arm must be in line.  * The dimension of 28 mm is a rough standard. Therefore, in case of unbalance in the seam, re-adjust the dimension.

● **How to perform adjustment**

1. Move the lower looper to the rightmost position.
2. Loosen the setscrew of the lower looper thread take-up.
3. Turn the lower thread take-up to make adjustment.
4. After setting the top side of the lower looper thread take-up to meet the left side of the lower looper holder arm, re-adjust the position of the lower looper thread take-up referring to the seam condition.
5. Tighten the setscrew of the lower looper thread take-up.

17. Position of the cloth plate

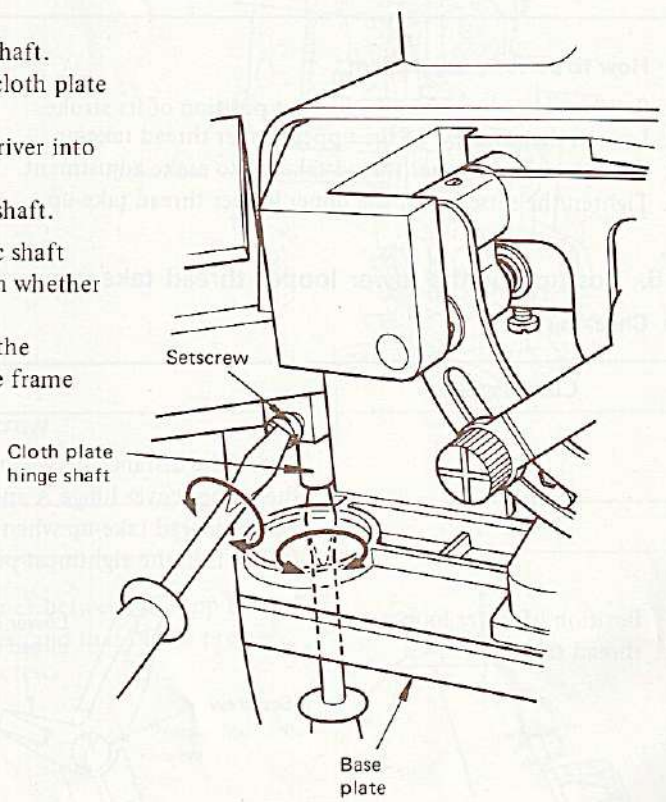
● Checking

Checking item	Description
Cloth plate	1. Check the clearance between the cloth plate and the throat plate. 2. Check the clearance between the cloth plate and the frame. 

● How to perform adjustment

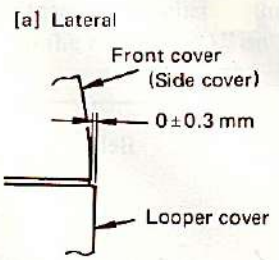
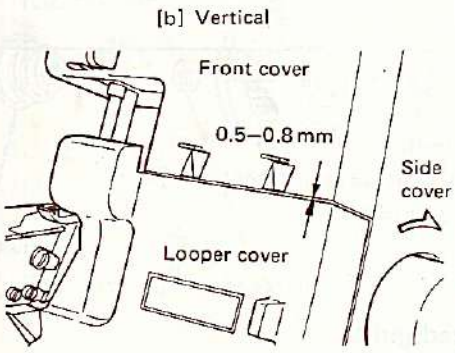
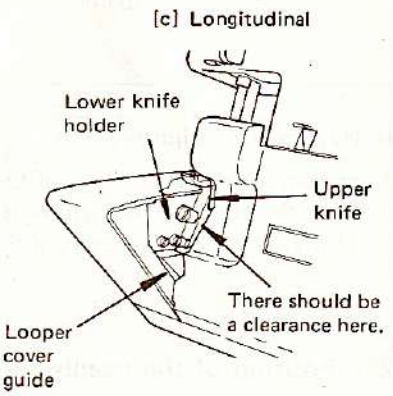
1. Loosen the setscrew of the cloth plate hinge shaft.
2. Turn the cloth plate hinge shaft to move the cloth plate longitudinally and laterally.
   (Perform this adjustment by putting a screwdriver into the adjustment hole in the base plate.)
3. Tighten the setscrew of the cloth plate hinge shaft.

Note : The cloth plate hinge shaft is an eccentric shaft and therefore the clearance depends upon whether the eccentricity is set to the right or left.
When the eccentricity is set to the right, the clearance between the cloth plate and the frame decreases.



18. Position of the looper cover

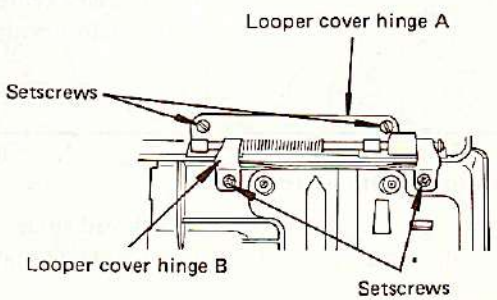
- **Checking**

Checking items	Description
Looper cover	[a] Lateral position: Check the difference in level between the front cover, the side cover and the looper cover. [b] Vertical position: Check the clearance between the front cover and the looper cover. [c] Longitudinal position: Check the clearance between the upper knife, the lower knife holder and the looper cover.   
Looper cover guide	Check that there is no clearance between the front cover and the looper cover.

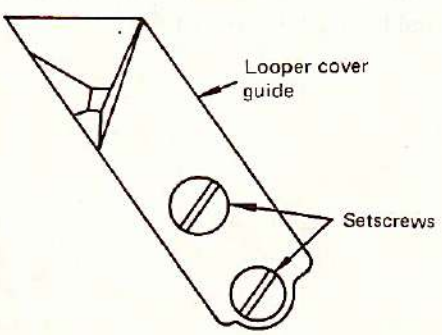
- **How to perform adjustment**

[1] Adjusting the longitudinal and lateral position
1. Loosen the setscrews of the looper cover hinge A.
2. Move the looper cover longitudinally and laterally to make adjustment.
3. Tighten the setscrews of the looper cover hinge A.

[2] Adjusting the vertical position
1. Loosen the setscrews of the looper cover hinge B.
2. Move the looper cover up or down to make adjustment.
3. Tighten the setscrews of the looper cover hinge B.

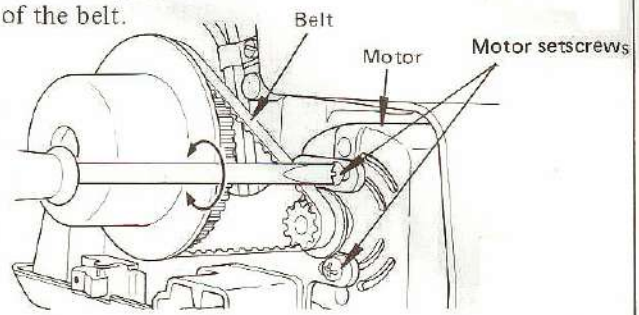


[3] Removing the clearance between the front cover and looper cover
1. Loosen the setscrews of the looper cover guide.
2. Move the looper cover guide back or forth to remove any clearance between the front cover and the looper cover.
3. Tighten the setscrews of the looper cover guide.



19. Tension of the belt

- **Checking**

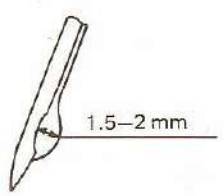
Checking item	Description
Belt	1. Sewing speed: 1,350±150 s.p.m. 2. Check the tension of the belt. The belt should slack 2 or 3 mm under a 200 g load. 

- **How to make adjustment**

1. Loosen the securing screws of the motor.
2. Move the motor to the right or left to make adjustment.
3. Tighten the securing screws of the motor.

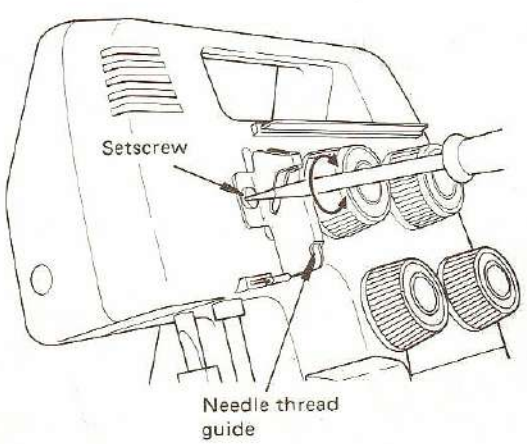
20. Position of the needle thread guide

- **Checking**

Checking item	Description
Size of needle thread loop	Check that the size of the needle thread loop is as specified when the lower looper blade point meets the needle center in sewing two plies of cotton broadcloth with a #100/3 spun thread. 

- **How to perform adjustment**

1. Loosen the setscrew of the needle thread guide.
2. Move the needle thread guide up or down to make adjustment.
3. Tighten the setscrew of the needle thread guide. (As the needle thread guide is moved up, the needle thread loop will be larger.)



21. Thread tension controller

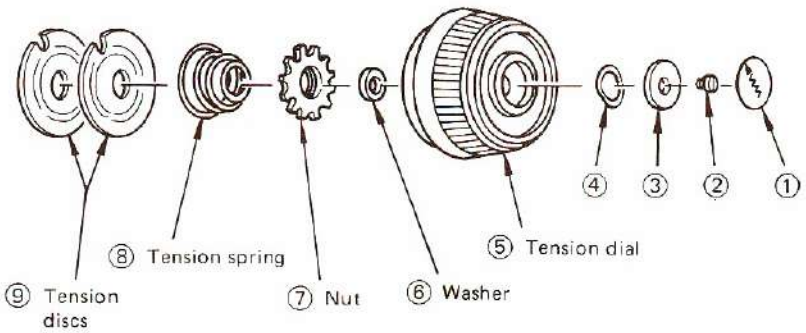
- **Checking**

Checking items	Description
Thread tension controller (for needle, upper looper and lower looper)	Using a #100/3 polyester spun thread, check that no tension is applied to the thread at "0" on the dial and that tension is applied to the thread at "1" on the dial.

- **How to perform adjustment**

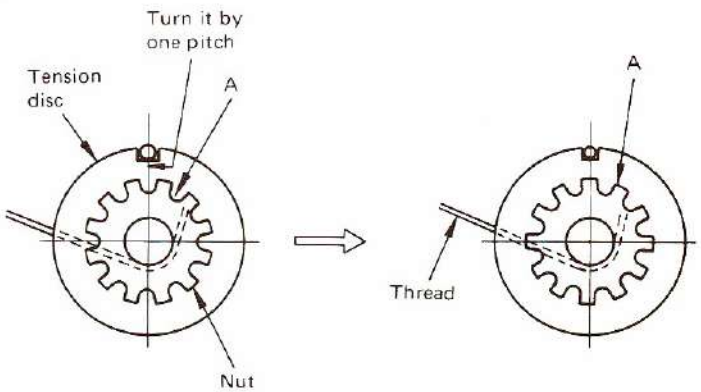
[a] Dismantle thread tension controller

1. Remove central pointer seal ①.
2. Loosen countersunk-head screw ②, and remove presser plate ③, washer ④ and tension dial ⑤.
3. Remove washer ⑥, loosen nut ⑦ and remove tension spring ⑧ and tension discs ⑨.



[b] How to adjust thread tension controller

1. Turn nut ⑦ until the #100/3 polyester spun thread begins to be subjected to tension.
2. Loosen (turn counterclockwise) the nut by one pitch as shown at right and check that the thread is released from the tension.
3. With the above condition maintained, set the dial at "0" and then reassemble the controller.



We reserve the right to modify without notification

Fritz Gegauf Ltd.
Bernina Sewing Machines
CH-8266 Steckborn/Switzerland

501 003 03
© Copyright Fritz Gegauf Ltd.
85/01